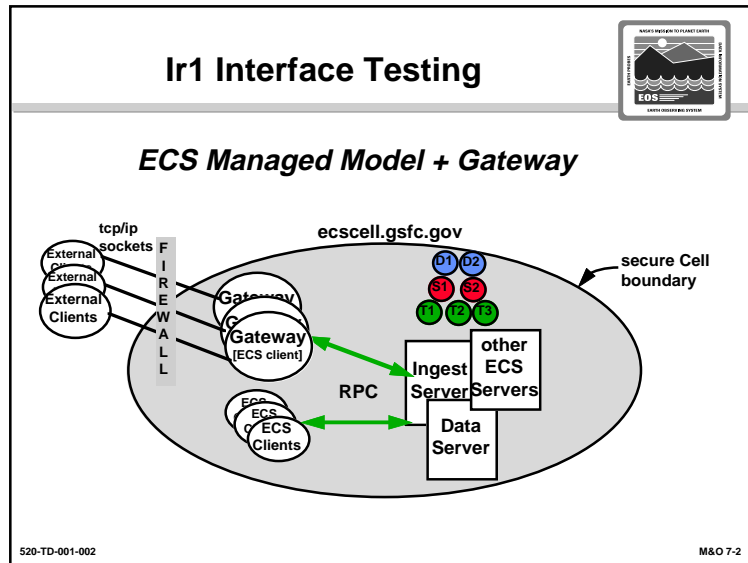**Interface Testing**

Leo Magday

Discussion Topics

TRMM Interface Test Support.   The M&O staff will be responsible for executing interface testing with supervision from the ESDIS IV&V contractor and ESDIS SMO. The M&O staff will perform troubleshooting and problem reporting. Specifically:

- The interface testing is scripted by ESDIS SMO and the ESDIS IV&V contractor. They will determine the time and type of test. However, because of the limited functionality of IR1, this test will be restricted to receiving data via the ingest server and verifying that the data has been placed and identified on the data server.

- All coordination with external interfaces will be the responsibility of ESDIS SMO.

Ir1 Interface Testing

ECS Managed Model + Gateway

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Discussion Topics

Overview of interface testing:

Communications Gateway. The Communications Gateway Process runs on the MSS Server at the LaRC and GSFC DAACs. This process provides the software interface between external entities and the Ingest and Data Server interfaces. The Ir1 Data Server interface is imbedded within the Communications Gateway Process.

Ingest Interface. The Ingest Interface runs on the Ingest Server computer and processes requests to ingest data from external data providers. The Ingest Interface supports two kinds of interfaces, an Automated Network Ingest interface and a Polling Ingest interface. Both interfaces respond to valid ingest requests by transferring the data to be ingested onto the Ingest Server computer's local disk, by means of the ftp process.

Execute CSS (Gateway) Software

- **/lr1_IT/CSS directory:**

– **/bin/CSScron.dbload**	**/include/CsDcAuthn.h***
– **/bin/CSScron.transfer**	**/include/CsDcClient.h***
– **/bin/DsGatewayEnviron**	**/include/CsDcPassword.h***
– **/bin/GWProxy***	**/include/CsDcServer.h***
– **/bin/Gateway***	**/include/CsEmMail.h***
– **/bin/allinfo_isql.csh***	**/include/CsFtFTP.h***
– **/bin/appinfo_isql.csh***	**/include/CsGateway.h**
– **/bin/appsnmp_isql.csh***	**/include/CsGatewayErr.h**
– **/bin/critevents_isql.csh***	**/include/CsGatewayLog.h**
– **/bin/dateinfo_isql.csh***	**/include/CsGatewayProxyErr.h**
– **/bin/dbload.csh***	**/include/CsGatewayThd.h**
– **/bin/ftp.cnfg**	**/include/CsSockErr.h**
– **/bin/gateway.cnfg**	**/include/CsSockErrNum.h**
– **/bin/hostinfo_isql.csh***	**/include/CsSockMessage.h**
– **/bin/stamp***	**/include/CsSockMessageHeader.h**

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Discussion Topics

Expect the following directories (listed on slide) and executables under the /lr1_IT/CSS directory

Execute CSS (Gateway) Software (cont'd)
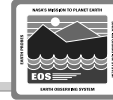
- /bin/summary_isql.csh*   /include/CsSockServer.h
- /bin/transfer*   /include/CsSocket.h
- /bin/transfer.csh*   /include/EcTypes.h

                                     /include/EcUtHostInfo.h*

- /lib/libCsDc.a   /include/EcUtLogger.h*
- /lib/libCsDcAuthn.a   /include/EcUtLoggerC.h*
- /lib/libCsDcSecLib.a   /include/EcUtLoggerE.h*
- /lib/libCsEmMail.a   /include/EcUtSysCmd.h*
- /lib/libCsFtFTP.a
- /lib/libCsGateway.a   /doc/README.CsEmMail
- /lib/libEcUt.a   /doc/README.CsFtFTP
- /lib/libEcUtLog.a   /doc/README.Gateway
- /lib/libEcUtLogC.a   /doc/README.evlogger

                                       /doc/README.ldatabase

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Discussion Topics

Merge *.cnfg Files

- **Merge ftp.cnfg and gateway.cnfg files into one file called ecs.config**
    - **Type: cd /Ir1_IT/CSS/bin**
    - **Type: cat ftp.cnfg > ecs.config**
    - **Type: cat gateway.cnfg >> ecs.config**

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Discussion Topics

Merge both the ftp.cnfg and the gateway.cnfg files into one file called ecs.config.

- Type: cd /Ir1_IT/CSS/bin

- Type: cat ftp.cnfg > ecs.config

- Type: cat gateway.cnfg >> ecs.config

Edit ecs.config File

- **Move ecs.config file from /lr1_IT/CSS/bin directory to /lr1_IT directory**
  - **Type: mv ecs.config /lr1_IT**
- **Edit ecs.config file by adding a DAAC extension to the end of "ingestserver" (i.e., "ingestserver-edf" for the EDF, "ingestserver-gsfc" for GSFC, etc.)**
  - **Type: vi ecs.config**
  - **Type: /ingestserver**
  - **Type: i**
  - **Type: -<DAAC>**

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Discussion Topics

- Move the ecs.config file from the /lr1_IT/CSS/bin directory to the /lr1_IT directory

  – 		Type: mv ecs.config /lr1_IT

- Edit the ecs.config file to add a DAAC extension to the end of "ingestserver" (i.e., "ingestserver-edf" for the EDF, "ingestserver-gsfc" for GSFC, etc.)

  – 		Type: vi ecs.config

  – 		Type: /ingestserver

  – 		Type: i

  – 		Type: -<DAAC>

**Create Data Server Environment
Variable Directories**

- **Under /lr1_IT directory, create a directory called DSS**
  - **Type: cd /lr1_IT**
  - **Type: mkdir DSS**
- **Under /lr1_IT/DSS directory, create the data server environment variable directories**
  - **Type: mkdir ftp**
  - **Type: mkdir temp_store**
  - **Type: mkdir archive**

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Discussion Topics

Create Data Server Environment Variable Directories

- create DSS directory

- create data server environment variable directories under DSS directory

Verify/Edit Environment Variables

- **Verify that environment variables in DsGatewayEnviron file point to the correct directories**
    - **source file for Data Server Interface functions**
- **The file should look as follows (if not, edit file):**
    - **setenv DSSSTAGEDIR   /lr1_IT/DSS/ftp**
    - **setenv DSSSTSTOREFROM /lr1_IT/DSS/temp_store**
    - **setenv DSSSTRETRIEVE /lr1_IT/DSS/archive**
    - **setenv DSSSTARCHIVE   /lr1_IT/DSS/archive**
- **Type: cd /lr1_IT/CSS/bin**
- **Type: cat DsGatewayEnviron**
- **Type: source DsGatewayEnviron**

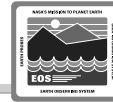520-TD-001-002   M&O 7-8

Discussion Topics

Verify that the environment variables in the DsGatewayEnviron file point to the correct directories and then source this file for the Data Server Interface functions
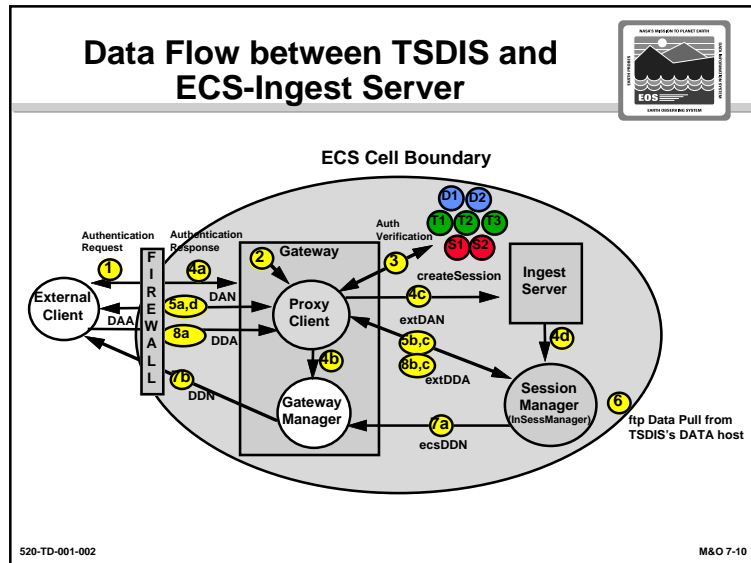
Start the Gateway Process

- **Change directory to the Gateway executable directory: cd /lr1_IT/CSS/bin**
- **Start the Gateway process: Gateway <port number> &**

                                                       where

  <port number> is a 4 digit port number (i.e., 1111, 2222, 3333, etc.)

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Discussion Topics

Use steps listed on slide to start the Gateway process.

Data Flow between TSDIS and ECS-Ingest Server

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Discussion Topics

1.   Authentication Request sent by the External Client

2.   Gateway starts a Proxy Client

3.   Proxy validates authentication

4a.   Authentication Response sent back to External Client

4b.   Proxy starts a Gateway Manager

4c.   Proxy creates a session with the Ingest Server

4d.   Session Manager started

5a,d. DAN sent by External Client,
       DAA sent back to External Client

5 b,c. ext DAN sent to Session Manager,
        ext DAA sent back to Proxy

6.   ECS FTP's data listed in DAN

7a.   ecs DDN sent to Gateway Manager

7b.   DDN sent to External Client

8a.   DDA sent by External Client

8b,c. ext DDA sent to Session Manager to remove DAN from list,
       Proxy client is given the signal to close the connection with the External Client

Ingest Protocol

- **Authentication Request**   - **External Client >(sockets)> Gateway**

- **Authentication Response**   - **Gateway >(sockets)> External Client**

- **DAN**   - **External Client >(sockets)> Gateway >(dce)> Ingest**

- **DAA**   - **Ingest >(dce)> Gateway >(sockets)> External Client**

- **FTP of files in DAN**   - **FTP initiated by Ingest (non-dce protocol by ECS)**

- **DDN**   - **Ingest >(dce)> Gateway >(sockets)> External Client**

- **DDA**   - **External Client >(sockets)> Gateway >(dce)> Ingest**

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Discussion Topics

- Authentication Request   - External Client >(sockets)> Gateway

- Authentication Response   - Gateway >(sockets)> External Client

- DAN   - External Client >(sockets)> Gateway >(dce)> Ingest

- DAA   - Ingest >(dce)> Gateway >(sockets)> External Client

- FTP of files in DAN   - FTP initiated by Ingest (non-dce protocol by ECS)

- DDN   - Ingest >(dce)> Gateway >(sockets)> External Client

- DDA   - External Client >(sockets)> Gateway >(dce)> Ingest

**Gateway Proxy Server and
Ingest Session Server**
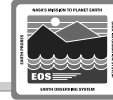
- **Communications and transfer of files for associated
  connection of an External Client**
- **Multiple Gateway Proxy Servers and Ingest Session
  Servers created for each External Client connection**

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Discussion Topics

- The Gateway Proxy Server and the Ingest Session Server handle all communications and transfer of files for the associated connection of an External Client.

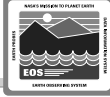- Multiple Gateway Proxy Servers and Ingest Session Servers are created for each External Client connection.

Authentication of External Client

- **Gateway Proxy Server verifies username and password included in Authentication Request message**
  - **API returns successful or unsuccessful validation response to the Gateway Proxy Server**
  - **Authentication Response message created and sent to the External Client with appropriate disposition**
    - » **1 - accepted**
    - » **2 - rejected**
  - **If accepted, Gateway Proxy Server waits to receive a DAN from External Client**
  - **If rejected, Gateway Proxy Server closes connection to External Client**
  - **External Client will have to reconnect prior to sending another Authentication Request**

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Discussion Topics

When the ECS Gateway subsystem receives an Authentication Request the Gateway Proxy Server calls an API to verify that the username and password that is included in the Authentication Request message is valid.

- The API returns either a successful or unsuccessful validation response to the Gateway Proxy Server which then creates the Authentication Response message and sends it to the External Client with the appropriate disposition.

  » Dispositions: 1 - accepted

                      2 - rejected

- If the Authentication Request is accepted the Gateway Proxy Server waits to receive a DAN from the External Client.

- If the Authentication Request is rejected the Gateway Proxy Server closes the connection to the External Client.

- Note: External Client will have to reconnect prior to sending another Authentication Request.

DAN Receipt, Validation and DAA Response

• **After Authentication Request is accepted, External Client sends DAN to ECS Gateway**
    – **Gateway Proxy Server receives DAN, alerts Ingest Server to create a Session Server, then sends the DAN to Session Server**
    – **Session Server validates DAN sequence number (no negative numbers allowed) and Expiration Time (no past dates allowed - TSDIS only), then sends the DAA with the appropriate disposition**
        » **The following DAA disposition (not identified in ICD), is used for Ir1 and may change:**
            • **bit 14 set - Invalid Expiration Time**
    – **If DAN is successfully validated, Session Server executes transfer of the file(s) listed in the DAN**
    – **If DAN is unsuccessfully validated, Session Server and Gateway Proxy Server will be stopped and connection closed**
        » **External Client has to reconnect to restart Ingest process**
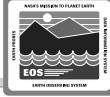
520-TD-001-002   M&O 7-14

Discussion Topics

After the External Clients Authentication Request is accepted the External Client will then send a DAN to the ECS Gateway.

- The Gateway Proxy Server receives the DAN, alerts the Ingest Server to create a Session Server, and then sends the DAN to the Session Server.

- The Session Server will validate the DAN sequence number (no negative numbers allowed) and the Expiration Time (no past dates allowed - TSDIS only) and then send the DAA with the appropriate disposition.

    – The following DAA disposition, which is not identified in the ICD, is used for Ir1 and may change:

        » bit 14 set - Invalid Expiration Time

- If the DAN is successfully validated the Session Server will execute the transfer of the file(s) listed in the DAN.

- If the DAN is unsuccessfully validated the Session Server and the Gateway Proxy Server will be stopped and the connection will be closed. The External Client will have to reconnect to restart the Ingest process.

FTP of Files

- **After DAN is successfully validated, Session Server will call an API to FTP the file(s) listed in the DAN**
- **For Ir1, External Client specific file at the ECS : (TSDIS_AcctProfile.dat or SDPF_AcctProfile.dat)**
  - **Created by the operator and updated as required for security reasons**
  - **Contains:**
    - » **location of the file(s)**
    - » **filename(s)**
    - » **hostname of the machine which contains the file(s) extracted from the DAN**
    - » **username and password**

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Discussion Topics

After the DAN is successfully validated, the Session Server will call an API to FTP the file(s) listed in the DAN.

- For Ir1, an External Client specific file (TSDIS_AcctProfile.dat or SDPF_AcctProfile.dat) at the ECS (which has been created by the operator and updated as required for security reasons) contains:

  - the location of the file(s)

  - filename(s)

  - the hostname of the machine which contains the file(s) extracted from the DAN and the username and password

Transfer of DDN and DDA Response
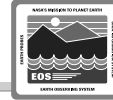
- **After DAN files have been transferred via FTP to the ECS, the Session Server sends DDN and waits for DDA**
  - **When External Client receives DDN, it responds with a DDA to ECS Gateway**
  - **Gateway Proxy sends DDA to Session Server**
  - **Session Server uses DAN sequence number in the DDA to remove that particular Ingest Request from process list**
    - » **If DAN sequence number in DDA does not match any DAN sequence numbers in process list , the erroneous DDA and it's DAN sequence number are logged in the Event Log**
  - **Other Ingest Requests will continue the Ingest process**
  - **If there no other Ingest Requests, the Session Server and Gateway Proxy Server are stopped and connection to External Client is closed**
  - **External Client will have to reconnect to restart Ingest process**

520-TD-001-002   M&O 7-16

Discussion Topics

After the file(s) listed in the DAN have been transferred via FTP to the ECS, the Session Server sends the DDN and waits for the DDA.

- When the External Client receives the DDN it responds with a DDA to the ECS Gateway.

- The Gateway Proxy sends the DDA to the Session Server.

- The Session Server uses the DAN sequence number in the DDA to remove that particular Ingest Request from the process list.

  - If the DAN sequence number in the DDA does not match any DAN sequence numbers in the process list , the erroneous DDA and it's DAN sequence number are logged in the Event Log.

- If there are other Ingest Requests it will continue the Ingest process until there are no more Ingest Requests and if not, the Session Server and the Gateway Proxy Server are stopped and the connection to the External Client is closed.

- The External Client will have to reconnect to restart the Ingest process.

Error Conditions

- **'DAAErrorFile.dat' file**
  - Editable by the operator to set any disposition allowed by the ICD as well as set the message type to short or long
  - DAA disposition (not identified in the ICD), is used for Ir1 and may change:
    - » bit 15 set - Missing required request metadata
  - 'DAAErrorFile.dat' file contains two integers
    - » First indicates message type (1 - short, 2 - long)
    - » Second indicates disposition (1-32 for long and 1-15 for short)
    - » To generate a DAA with an accepted disposition, all bits are set to zero, the DAAErrorFile.dat must contain a (1 and 32) or a (2 and 15)

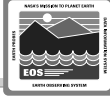520-TD-001-002   M&O 7-17

Discussion Topics

Since the ECS does minimal validation of the DAN in Ir1, all DAA messages are generated by the Session Server by reading the 'DAAErrorFile.dat' file, except for the two DAN validations that were discussed earlier which are created internally by the Session Server.

- This file can be edited by the operator to set any disposition allowed by the ICD as well as set the message type to short or long.

- The following DAA disposition, which is not identified in the ICD, is used for Ir1 and may change:

  – bit 15 set - Missing required request metadata

- Note: The 'DAAErrorFile.dat' file contains two integers, the first indicates the message type (1 - short, 2 - long) and the second indicates the disposition (1 through 32 for long and 1 through 15 for short). To generate a DAA with an accepted disposition, all bits are set to zero, the DAAErrorFile.dat must contain a (1 and 32) or a (2 and 15).

FTP Errors

- **If there are any FTP errors, the FTP error status codes will be logged in the Event Log**
- **DDN will be generated using information in the 'DDNErrorFile.dat' file and sent to External Client**
  - **If the information in the External Client specific file (TSDIS_AcctProfile.dat or SDPF_AcctProfile.dat) is incorrect an error will be logged in the Event Log**
  - **DDN will be generated using the information in the 'DDNErrorFile.dat' file and sent to the External Client**
  - **These two types of errors will need intervention by the ECS operator to request Re-Ingest of any files not transferred since the DDN may not contain an accurate disposition**

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Discussion Topics

If there are any FTP errors, the FTP error status codes will be logged in the Event Log and the DDN will be generated using the information in the 'DDNErrorFile.dat' file and sent to the External Client.

- If the information in the External Client specific file (TSDIS_AcctProfile.dat or SDPF_AcctProfile.dat) is incorrect an error will be logged in the Event Log and the DDN will be generated using the information in the 'DDNErrorFile.dat' file and sent to the External Client.

- These two types of errors will need intervention by the ECS operator to request Re-Ingest of any files that were not transferred since the DDN may not contain an accurate disposition.

DDN Dispositions

- **DDN dispositions(not identified in the ICD), are used for Ir1 and may change:**
  - **integer 8   - File size discrepancies**
  - **integer 9   - Missing required metadata**
  - **integer 10 - Metadata parameters out of range**
  - **integer 11 - Data conversion failure**
  - **integer 12 - Failure to archive data**
  - **integer 13 - Inability to xfer data within time window**
- **Note: 'DDNErrorFile.dat file' contains two integers**
  - **First indicates the message type (1 - short, 2 - long)**
  - **Second indicates the disposition (Integer 1Byte)**

520-TD-001-002   M&O 7-19

Discussion Topics

Since the ECS does no validation of the ingested data in Ir1 all DDN messages are generated by the Session Server by reading the 'DDNErrorFile.dat' file. This file can be edited by the operator to set any disposition allowed by the ICD as well as set the message type to short or long.

- The following DDN dispositions, which are not identified in the ICD, are used for Ir1 and may change:

  - integer 8   - File size discrepancies

  - integer 9   - Missing required metadata

  - integer 10 - Metadata parameters out of range

  - integer 11 - Data conversion failure

  - integer 12 - Failure to archive data

  - integer 13 - Inability to xfer data within time window

- Note: The 'DDNErrorFile.dat file' contains two integers, the first indicates the message type (1 - short, 2 - long) and the second indicates the disposition (Integer 1Byte).

Communication Failures
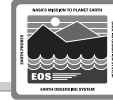
- **Gateway Proxy Server is continually listening to the socket that the External Client is connected to**
    - **If connection is broken other than by the Gateway Proxy Server, a Socket Exception error is sent to the Event Log and the Gateway Proxy Server is stopped**
    - **If a Session Server is associated with the lost connection, it will not be stopped and will require ECS operator intervention (for cleanup purposes)**

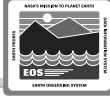520-TD-001-002   M&O 7-20

Discussion Topics

The Gateway Proxy Server is continually listening to the socket that the External Client is connected to.

- If the connection is broken other than by the Gateway Proxy Server a Socket Exception error is sent to the Event Log and the Gateway Proxy Server is stopped.

- If this happens and there is a Session Server associated with this lost connection, it will not be stopped and will require ECS operator intervention for cleanup purposes.

Ingest Execution Procedures

- **Check for the following directory structure, files and privileges:**
    - **Directories & files:**
        - » **/lr1_IT/INGEST/bin/IngestPolling**   **(exe. file)**
        - » **/lr1_IT/INGEST/bin/IngestServer**   **(exe. file)**
        - » **/lr1_IT/INGEST/bin/SessServer**   **(exe. file)**
        - » **/lr1_IT/INGEST/data/DAAErrorFile.dat**   **(non-exe. file)**
        - » **/lr1_IT/INGEST/data/DDNErrorFile.dat**   **(non-exe. file)**
        - » **/lr1_IT/INGEST/data/SDPF_AcctProfile.dat**   **(non-exe. file)**
        - » **/lr1_IT/INGEST/data/envsetup**   **(exe. file)**
    - **Privileges:**
        - » **directories**   **(drwxrwxr-x)**
        - » **exe. files**   **(-rwxrwxr-x)**
        - » **non-exe. files**   **(-rw-rw-r--)**

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Discussion Topics

- If all directories and files exist and have the proper privileges then you may proceed with the next step.

- If all the directories and files exist but do not have the correct privileges change the privileges to their correct settings (see above).

- If you are missing any directories and/or files, delete all files and directories that were created from the tar file and install the tar file again.

- If you are still missing directories and/or files there may be some other problem.

Edit Environment Variables Setup File

- **Change directory to data: cd /Ir1_IT/INGEST/data**
- **Edit envsetup file for DAAC specific information: vi envsetup**
- **Change**
  setenv GatewayCDSIngestServerEnv "/.:/Ir1/Ingest/ingestserver"

  to

  setenv GatewayCDSIngestServerEnv "/.:/Ir1/Ingest/ingestserver-<daac>"
    - **where <daac> is replaced with the site specific ID (i.e. edf, gsfc or larc)**

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Discussion Topics

- Change directory to data: cd /Ir1_IT/INGEST/data

- Edit envsetup file for DAAC specific information: vi envsetup

- Change - setenv GatewayCDSIngestServerEnv "/.:/Ir1/Ingest/ingestserver"

    to

    setenv GatewayCDSIngestServerEnv "/.:/Ir1/Ingest/ingestserver-<daac>"

- where <daac> is replaced with the site specific ID (i.e. edf, gsfc or larc).

Check envsetup file:
cat envsetup

- **Check settings for the following environment variables:**
  - setenv GatewayCDSGatewayServerEnv "/.:/lr1/Gateway/gateway"
  - setenv GatewayCDSGatewayGroupEnv "/.:/lr1/Gateway/gatewaygroup"
  - setenv GatewayCDSIngestServerEnv "/.:/lr1/Ingest/ingestserver-<daac>"
    (<daac> = either edf, gsfc or larc)
  - setenv GatewayCDSIngestSessionEnv "/.:/lr1/Ingest/insessionserver"
  - setenv GatewayCDSIngestGroupEnv "/.:/lr1/Ingest/ingestgroup"
  - setenv GatewayCDSProfileNameEnv "/.:/lr1/cell-profile"
  - setenv ECS_DEFAULT_PROFILE "/.:/lr1/cell-profile"
  - setenv ECS_INGEST_EXE /lr1_IT/INGEST/bin/SessServer
  - setenv ECS_INGEST_DAA_ERROR_FILE /lr1_IT/INGEST/data/DAAErrorFile.dat
  - setenv ECS_INGEST_DDN_ERROR_FILE /lr1_IT/INGEST/data/DDNErrorFile.dat
  - setenv ECS_INGEST_SESSION_FILE_PATH /lr1_IT/INGEST/data/IngestSessions.txt
  - setenv ECS_INGEST_HOST_FILE_PATH /lr1_IT/INGEST/data
  - setenv ECS_INGEST_FTP_LOCAL_PATH /lr1_IT/INGEST/temp_store
  - setenv ECS_INGEST_POLL_TIMER 28800

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Discussion Topics

Environmental Variables. The operation of the Ingest Interface is controlled, to some extent, by UNIX environment variables.

Check envsetup file: cat envsetup

- Check settings for the following environment variables:

    – setenv GatewayCDSGatewayServerEnv "/.:/lr1/Gateway/gateway"

    – setenv GatewayCDSGatewayGroupEnv "/.:/lr1/Gateway/gatewaygroup"

    – setenv GatewayCDSIngestServerEnv "/.:/lr1/Ingest/ingestserver-<daac>"
      (<daac> = either edf, gsfc or larc)

    – setenv GatewayCDSIngestSessionEnv "/.:/lr1/Ingest/insessionserver"

    – setenv GatewayCDSIngestGroupEnv "/.:/lr1/Ingest/ingestgroup"

    – setenv GatewayCDSProfileNameEnv "/.:/lr1/cell-profile"

    – setenv ECS_DEFAULT_PROFILE "/.:/lr1/cell-profile"

    – setenv ECS_INGEST_EXE /lr1_IT/INGEST/bin/SessServer

    – setenv ECS_INGEST_DAA_ERROR_FILE /lr1_IT/INGEST/data/DAAErrorFile.dat

    – setenv ECS_INGEST_DDN_ERROR_FILE /lr1_IT/INGEST/data/DDNErrorFile.dat

    – setenv ECS_INGEST_SESSION_FILE_PATH /lr1_IT/INGEST/data/IngestSessions.txt

    – setenv ECS_INGEST_HOST_FILE_PATH /lr1_IT/INGEST/data

    – setenv ECS_INGEST_FTP_LOCAL_PATH /lr1_IT/INGEST/temp_store

    – setenv ECS_INGEST_POLL_TIMER 28800

- If the envsetup file does not set the above variables edit the envsetup file so that it does.

Edit/Create *_AcctProfile.dat' Files
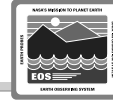
- **Change directory to INGEST: cd /lr1_IT/INGEST**
- **Create the temporary storage directory from the INGEST directory: mkdir temp_store**
- **Set the privileges for the temporary storage directory: chmod 775 temp_store**
- **Change directory to data: cd /lr1_IT/INGEST/data**

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Discussion Topics

- Change directory to INGEST: cd /lr1_IT/INGEST

- Create the temporary storage directory from the INGEST directory: mkdir temp_store

- Set the privileges for the temporary storage directory: chmod 775 temp_store

- Change directory to data: cd /lr1_IT/INGEST/data

Edit/Create *_AcctProfile.dat' Files

- **Edit 'SDPF_AcctProfile.dat' file to contain valid username and password for access to SDPF machine**
- **Create 'TSDIS_ AcctProfile.dat' file:**
  cp SDPF_AcctProfile.dat TSDIS_ AcctProfile.dat
- **Edit 'TSDIS_AcctProfile.dat' file to contain valid username and password for access to TSDIS machine**
- **Create 'NESDIS_AcctProfile.dat' file:**
  cp SDPF_AcctProfile.dat NESDIS_ AcctProfile.dat
- **Edit 'NESDIS_AcctProfile.dat' file to contain valid username and password for access to NESDIS machine**
- **Create 'GDAO_AcctProfile.dat' file:**
  cp SDPF_AcctProfile.dat GDAO_ AcctProfile.dat
- **Edit 'GDAO_AcctProfile.dat' file to contain valid username and password for access to GDAO machine**
- **Change directory to Ir1_IT: cd /Ir1_IT**

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Discussion Topics

- Edit 'SDPF_AcctProfile.dat' file to contain valid username and password for access to SDPF machine.

- Create 'TSDIS_ AcctProfile.dat' file: cp SDPF_AcctProfile.dat TSDIS_ AcctProfile.dat

- Edit 'TSDIS_AcctProfile.dat' file to contain valid username and password for access to TSDIS machine.

- Create 'NESDIS_AcctProfile.dat' file: cp SDPF_AcctProfile.dat NESDIS_ AcctProfile.dat

- Edit 'NESDIS_AcctProfile.dat' file to contain valid username and password for access to NESDIS machine.

- Create 'GDAO_AcctProfile.dat' file: cp SDPF_AcctProfile.dat GDAO_ AcctProfile.dat

- Edit 'GDAO_AcctProfile.dat' file to contain valid username and password for access to GDAO machine.

- Change directory to Ir1_IT: cd /Ir1_IT

NOTE: After the CSS (Gateway) installation has been completed FTP the ecs.config file in the Ir1_IT directory on the Gateway machine to the Ir1_IT directory on the Ingest machine.

Start Ingest Server

- **Login to DCE: dce_login <account username>**
- **Enter Password: <account password>**
- **Change directory to data: cd /lr1_IT/INGEST/data**
- **Source the Environment Setup file:**
  source envsetup
- **Change directory to Ingest executable directory:**
  cd /lr1_IT/INGEST/bin
- **Start Ingest Server: IngestServer &**
- **Hit the Enter key**
- **Make sure Ingest Server is running: ps**
- **Make sure Ingest Event Log file is created:**
  ls/usr/local/hislog/IngestLocal.log

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Discussion Topics

Start the Ingest Server:

- Login to DCE: dce_login <account username>

- Enter Password: <account password>

        (see system administrator for correct dce account information)

- Change directory to data: cd /lr1_IT/INGEST/data

- Source the Environment Setup file: source envsetup

- Change directory to Ingest executable directory: cd /lr1_IT/INGEST/bin

- Start Ingest Server: IngestServer &

- Hit the Enter key

- Make sure Ingest Server is running: ps

- Make sure Ingest Event Log file is created: ls /usr/local/hislog/IngestLocal.log


Start Ingest Polling Process

- **Change directory to Ingest executable directory:
  cd /lr1_IT/INGEST/bin**
- **Start Ingest Polling process:**
  IngestPolling No <ADC> <directory path> <data type> <hostname> &
    - **<ADC> - Affiliated Data Center (NESDIS or GDAO)**
    - **<directory path> - path to directory being polled**
    - **<data type> - type of data being polled from directory (any text accepted for this argument)**
    - **<hostname> - hostname of machine being polled at NESDIS or GDAO (complete hostname necessary i.e., hostname.gsfc.nasa.gov)**
- **Hit the Enter key**
- **Make sure Ingest Polling process is running: ps**

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Discussion Topics

Command Line Arguments for the Polling Process. The operation of the Polling Process is controlled by command line arguments.

- To start the Ingest Polling process:

    - Change directory to Ingest executable directory: cd /lr1_IT/INGEST/bin

    - Start Ingest Polling process:
      IngestPolling No <ADC> <directory path> <data type> <hostname> &

        » <ADC> - Affiliated Data Center (NESDIS or GDAO)

        » <directory path> - path to directory being polled

        » <data type> - type of data being polled from directory (any text accepted for this argument)

        » <hostname> - hostname of machine being polled at NESDIS or GDAO (complete hostname necessary i.e. hostname.gsfc.nasa.gov)

    - **Note 1**: The last three arguments <directory path>, <data type>, <hostname> can be repeated for polling of multiple directories.

    - **Note 2**: Multiple Ingest Polling processes can be run for polling multiple machines.

    - Hit the Enter key

    - Make sure Ingest Polling process is running: ps
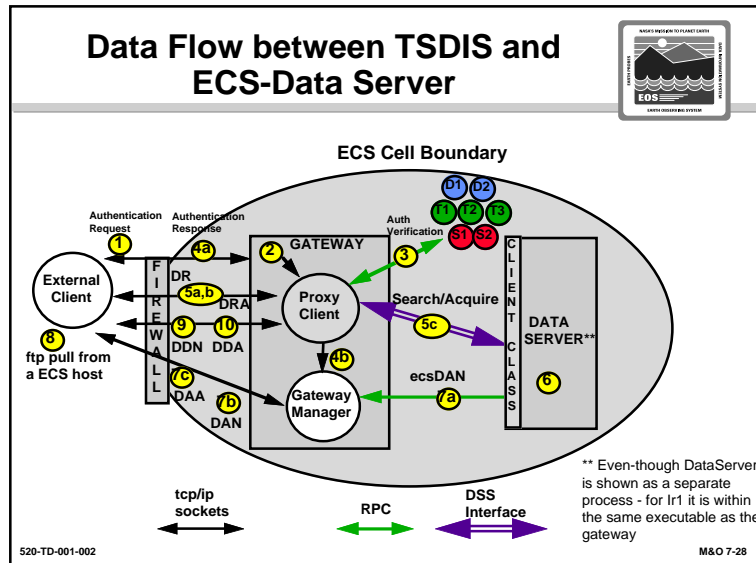
Data Flow between TSDIS and ECS-Data Server

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Discussion Topics

1. Authentication Request sent by the External Client

2. Gateway starts a Proxy Client

3. Proxy validates authentication

4a. Authentication Response sent back to External Client

4b. Proxy starts a Gateway Manager

5a,b DR sent by External Client
     DRA sent back to External Client

5c. Search is performed for files in DR and if found, acquire is performed

6. Data Server libraries fill out DAN

7a. ecsDAN sent to Gateway Manager

7b. DAN sent to External Client

7c. DAA sent by External Client

8. External Client FTPs data listed in DAN

9. DDN sent by External Client

10. DDA sent back to External Client and connection with External Client is closed

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Review Data Server Interface Protocol

- **Authentication Request**
- **Authentication Response**
- **DR**
- **DRA**
- **DAN**
- **DAA**
- **FTP of files in DAN**
- **DDN**
- **DDA**

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Discussion Topics

- Authentication Request   - External Client > (sockets) > Gateway

- Authentication Response - Gateway > (sockets) > External Client

- DR - External Client > (sockets) > Gateway > Data Server Interface

- DRA - Gateway > (sockets) > External Client

- DAN - Data Server Interface > (dce) > Gateway > (sockets) > External Client

- DAA - External Client > (sockets)> Gateway

- FTP of files in DAN - FTP initiated by External Client (non-dce protocol)

- DDN - External Client > (sockets) > Gateway

- DDA - Gateway > (sockets) > External Client

Review Authentication of External Client

- **Authentication Request**

- **Authentication Response**

- **Dispositions**
  - − **Accepted**
  - − **Rejected**

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Discussion Topics

When the ECS Gateway subsystem receives an **Authentication Request** the Gateway Proxy Server calls an API to verify that the username and password that is included in the Authentication Request message is valid.

- The API returns either a successful or unsuccessful validation response to the Gateway Proxy Server which then creates the **Authentication Response** message and sends it to the external client with the appropriate disposition.

- **Dispositions**:
  - − 1 - accepted
  - − 2 - rejected

- If the Authentication Request is accepted, the Gateway Proxy Server waits to receive a DR from the external client.

- If the Authentication Request is rejected, the Gateway Proxy Server closes the connection to the external client.

Note: The external client will have to reconnect prior to sending another Authentication Request.

Review the DR and the DRA

- **DR from external client**

- **DRA from Gateway Proxy Server**

- **Request ID**

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Discussion Topics

- After the external client's Authentication Request is accepted the external client will then send a **DR** to the ECS Gateway.

- The Gateway Proxy Server receives the DR and sends back to the external client a **DRA** as a receipt of the DR.

- Furthermore, the Gateway Proxy Server passes the DR to the Data Server Interface to perform the data searches.

- The DRA also provides the external client with a unique **Request ID** which correlates with the DAN received from ECS upon staging for retrieval.

Review of the DAN and the DAA

- **DAN**
  - **TOTAL_FILE_COUNT"**
  - **DIRECTORY_ID**
  - **FILE_ID**
  - **EXPIRATION_TIME**
- **DAA**

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Discussion Topics

After the search for the requested files is complete, the acquire portion of the interface is called in which the **DAN** is filled out with the appropriate data.

- Included in the DAN is the "TOTAL_FILE_COUNT" which specifies the number of files found, the "DIRECTORY_ID" which is the directory in which the requested files had been staged for retrieval, the "FILE_ID" which is the file name requested, and an "EXPIRATION_TIME" which designates how long the files will reside in the staged directory for retrieval.

- The DAN is sent from the Data Server Interface to the Gateway via an rpc call and then to the external client through sockets.

- Upon receiving and after validation of the DAN (very limited in Ir1), the external client returns a DAA as a receipt of the DAN.

Review FTP of Files

- **FTP from External Client**
- **DAN Information**
  - **location of the file(s)**
  - **filename(s)**
  - **hostname**
  - **username**
  - **password**

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Discussion Topics

After the DAN is successfully validated, the external client will either perform a manual ftp or call an API to ftp the file(s) listed in the DAN.

- For Ir1 the location of the file(s), filename(s) and the hostname of the machine which contains the file(s) are extracted from the DAN and the username and password are extracted from an external client specific file (i.e., the dsc_ddf_fse_info.txt file) at the ECS which has been created by the operator and updated as required for security reasons.

Review Transfer of DDN and DDA Response

- **External client sends DDN and waits**

- **ECS Gateway receives DDN and sends DDA**

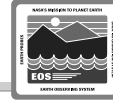520-TD-001-002   M&O 7-34

Discussion Topics

After the file(s) listed in the DAN have been transferred via ftp, the external client sends the **DDN** and waits for the **DDA**.

- When the ECS Gateway receives the DDN it responds with a DDA to the external client.

Communication Failures

- **If connection is broken other than by the Gateway Proxy Server**

  - **Socket Exception error is sent to the Event Log**

  - **Gateway Proxy Server is stopped**

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Discussion Topics

The Gateway Proxy Server is continually listening to the socket that the external client is connected to and if the connection is broken other than by the Gateway Proxy Server a Socket Exception error is sent to the Event Log and the Gateway Proxy Server is stopped.